

# IEEE 802.3dg Hybrid Meeting Practices

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- In-room Attendees:
  - In Webex choose connect without audio before you join
  - Use the Webex queue to indicate you want to speak
    - Wait to be called on before speaking (even at the microphone)
    - Repeat any questions that may be asked away from the microphone
- Remote Attendees:
  - Join Webex and set Webex audio as ‘music’
  - Use the Webex chat window to indicate you want to speak (“q”)
  - Wait to be called on to speak – Please MUTE otherwise

# Agenda and General Information

IEEE P802.3dg 100 Mb/s Long-Reach Single-Pair  
Ethernet Task Force

George Zimmerman

CME Consulting/ADI, APL Group, Cisco, Marvell, OnSemi, SenTekSe, Sony  
802.3dg Interim Meeting, 13 May 2024

# Agenda

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- Welcome and Introductions
- Approve Agenda
- Approve Prior Meeting Minutes
- Goals for this meeting
- Big Ticket Items
- Reflector and Web
- Ground Rules
- IEEE
  - Structure, Bylaws and Rules
  - Call for Patents
  - IEEE Standards Process
- Liaisons and Communications
- Presentations
- Closing Business
- Future Meetings

# Approve prior meeting minutes

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- Need to approve minutes from 28 Feb 2024 at [https://www.ieee802.org/3/dg/public/May\\_2022/Unconfirmed\\_minutes\\_3dg\\_02282024.pdf](https://www.ieee802.org/3/dg/public/May_2022/Unconfirmed_minutes_3dg_02282024.pdf)
- Need to approve minutes from 11 Mar 2024 at
- [https://www.ieee802.org/3/dg/public/May\\_2022/Unconfirmed\\_minutes\\_3dg\\_03112024.pdf](https://www.ieee802.org/3/dg/public/May_2022/Unconfirmed_minutes_3dg_03112024.pdf)

# General Decorum

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- An officer is permitted to make an audio or slideshow recording of this meeting exclusively for the purpose of generating minutes which shall not be copied or distributed. **IEEE 802.3 meetings do not use this option.** Recording of the proceedings by any other participant or observer, in part or in whole, via any means, is prohibited. (January 2020 IEEE-SA Standards Board Ops Manual 5.3.3.2)
- Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (January 2020 IEEE-SA Standards Board Ops Manual 5.3.3.3)

# Task Force Decorum

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- An officer is permitted to make an audio or slideshow recording of this meeting exclusively for the purpose of generating minutes which shall not be copied or distributed. **IEEE 802.3 meetings do not use this option.** Recording of the proceedings by any other participant or observer, in part or in whole, via any means, is prohibited. (January 2020 IEEE-SA Standards Board Ops Manual 5.3.3.2)
- Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (January 2020 IEEE-SA Standards Board Ops Manual 5.3.3.3)
- Please observe proper decorum in meetings
- Please **MUTE** unless called on
- Use the **CHAT** to be placed in the queue (a 'Q' is sufficient)
- The chat should be used only to send to "Everyone", for official business – not for side conversations.

# Goals for the meeting

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- Hear technical presentations
- Progress PHY Baselines
- Progress Discussion on MII

# Interim meeting - fees

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- This meeting is conducted as part of the IEEE 802.3 Interim Session. Registration and payment of fees is required, and attendance without properly registering is subject to penalties under IEEE 802 rules.
- See <https://www.ieee802.org/3/interims/index.html> for further information and a registration link



# Reflector and Web

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- To subscribe to the 100 Mb/s Long-Reach Single-Pair Ethernet Task Force reflector, send an email to:

[ListServ@ieee.org](mailto:ListServ@ieee.org)

with the following in the body of the message (do not include “<>”):

*subscribe STDS-802-3-SPEP2P <yourfirstname> <yourlastname>  
end*

- Send 100 Mb/s Long-Reach Single-Pair Ethernet Task Force reflector messages to:

[STDS-802-3-SPEP2P@listserv.ieee.org](mailto:STDS-802-3-SPEP2P@listserv.ieee.org)

- Task Force web page URL:

<https://www.ieee802.org/3/dg/index.html>

*This reflector is now only 802.3dg*

# Task Force Private Area

- URL: <http://www.ieee802.org/3/dg/private>
  - Username: <<XXXXXX>>
  - Password: <<XXXXXXXX>>
- Write it down...
- Note - The draft, and any other content, is posted for your review only, and neither the content nor access information should be copied or redistributed to others in violation of document copyrights.

**NO PRIVATE AREA YET**

# Ground Rules

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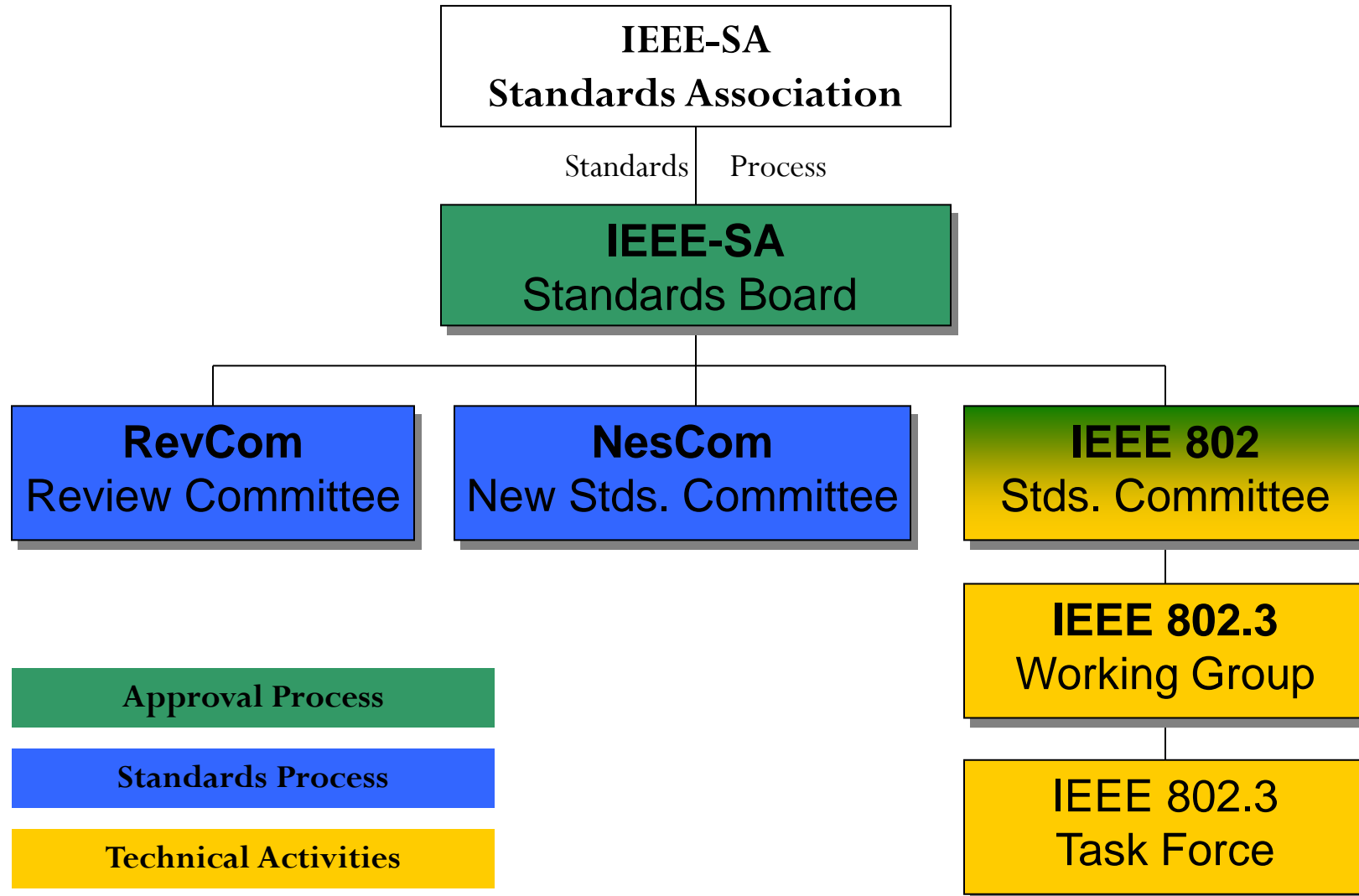
- Based upon IEEE 802.3 Rules
  - Foundation based upon Robert's Rules of Order
  - Anyone in the room may speak
  - Anyone in the room may vote, Only 802.3 voters vote on electronic meetings
- **RESPECT**... give it, get it
- NO product pitches
- NO corporate pitches
- NO prices!!!
  - This includes costs, ASPs, etc. no matter what the currency
- NO restrictive notices

# Attendance

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- Attendance will be taken from IMAT and Webex
  - IMAT is the official record – so be sure to sign in
- **PLEASE DO NOT FORGET TO SIGN INTO IMAT – NEED FOR CORRECTIONS IS STRONGLY DISCOURAGED**
- Please email the chair if your affiliation is not readily identifiable from your email or otherwise.
  - Please put your affiliation in your Webex name or in the chat

# IEEE Structure



# Important Bylaws and Rules

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- **IEEE-SA Operations Manual**  
[http://standards.ieee.org/develop/policies/sa\\_opman/](http://standards.ieee.org/develop/policies/sa_opman/)
- **IEEE-SA Standards Board Bylaws**  
<http://standards.ieee.org/develop/policies/bylaws/>
- **IEEE-SA Standards Board Operations Manual**  
<http://standards.ieee.org/develop/policies/opman/>
- **IEEE 802 LAN/MAN Standards Committee (LMSC) Policies and Procedures**  
<https://ieee.app.box.com/v/PandP-LMSC>
- **IEEE 802 LAN/MAN Standards Committee (LMSC) Operations Manual**  
<http://www.ieee802.org/devdocs.shtml>
- **IEEE 802 LAN/MAN Standards Committee (LMSC) Working Group (WG) Policies and Procedures**  
<http://www.ieee802.org/devdocs.shtml>
- **IEEE 802.3 Working Group Operating Rules**  
[http://ieee802.org/3/rules/P802\\_3\\_rules.pdf](http://ieee802.org/3/rules/P802_3_rules.pdf)

# INSTRUCTIONS FOR THE WG CHAIR

The IEEE SA strongly recommends that at each WG meeting the chair or a designee:

- **Show slides 1 through 4 of this presentation**
- **Advise the WG attendees that:**
  - IEEE's patent policy is described in Clause 6 of the *IEEE SA Standards Board Bylaws*;
  - Early identification of patent claims which may be essential for the use of standards under development is strongly encouraged;
  - There may be Essential Patent Claims of which IEEE is not aware. Additionally, neither IEEE, the WG, nor the WG Chair can ensure the accuracy or completeness of any assurance or whether any such assurance is, in fact, of a Patent Claim that is essential for the use of the standard under development.
- **Instruct the WG Secretary to record in the minutes of the relevant WG meeting:**
  - That the foregoing information was provided and that slides 1 through 4 (and this slide 0, if applicable) were shown;
  - That the chair or designee provided an opportunity for participants to identify patent claim(s)/patent application claim(s) and/or the holder of patent claim(s)/patent application claim(s) of which the participant is personally aware and that may be essential for the use of that standard
  - Any responses that were given, specifically the patent claim(s)/patent application claim(s) and/or the holder of the patent claim(s)/patent application claim(s) that were identified (if any) and by whom.
- The WG Chair shall ensure that a request is made to any identified holders of potential essential patent claim(s) to complete and submit a Letter of Assurance.
- It is recommended that the WG Chair review the guidance in *IEEE SA Standards Board Operations Manual* 6.3.5 and in FAQs 14 and 15 on inclusion of potential Essential Patent Claims by incorporation or by reference.

Note: **WG** includes Working Groups, Task Groups, and other standards-developing committees with a PAR approved by the IEEE SA Standards Board.

# **PARTICIPANTS HAVE A DUTY TO INFORM THE IEEE**

- Participants shall inform the IEEE (or cause the IEEE to be informed) of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
- Participants should inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims

**Early identification of holders of potential  
Essential Patent Claims is encouraged**



# **WAYS TO INFORM IEEE**

- **Cause an LOA to be submitted to the IEEE SA ([patcom@ieee.org](mailto:patcom@ieee.org)); or**
- **Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or**
- **Speak up now and respond to this Call for Potentially Essential Patents**

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair

# OTHER GUIDELINES FOR IEEE WORKING GROUP MEETINGS

- All IEEE SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
  - Don't discuss the interpretation, validity, or essentiality of patents/patent claims.
  - Don't discuss specific license rates, terms, or conditions.
    - Relative costs of different technical approaches that include relative costs of patent licensing terms may be discussed in standards development meetings.
    - Technical considerations remain the primary focus.
  - Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
  - Don't discuss the status or substance of ongoing or threatened litigation.
  - Don't be silent if inappropriate topics are discussed. Formally object to the discussion immediately.

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For more details, see *IEEE SA Standards Board Operations Manual*, clause 5.3.10 and *Antitrust and Competition Policy: What You Need to Know* at <http://standards.ieee.org/develop/policies/antitrust.pdf>

# **PATENT-RELATED INFORMATION**

**The patent policy and the procedures used to execute that policy are documented in the:**

- **IEEE SA Standards Board Bylaws**  
(<http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6>)
- **IEEE SA Standards Board Operations Manual**  
(<http://standards.ieee.org/develop/policies/opman/sect6.html#6.3>)

Material about the patent policy is available at  
<http://standards.ieee.org/about/sasb/patcom/materials.html>

**If you have questions, contact the  
IEEE SA Standards Board Patent  
Committee Administrator at  
[patcom@ieee.org](mailto:patcom@ieee.org)**

# **INSTRUCTIONS FOR CHAIRS OF STANDARDS DEVELOPMENT ACTIVITIES**

**At the beginning of each standards development meeting the chair or a designee is to:**

- Show the following slides (or provide them beforehand)
- Advise the standards development group participants that:
  - IEEE SA's copyright policy is described in Clause 7 of the IEEE SA Standards Board Bylaws and Clause 6.1 of the IEEE SA Standards Board Operations Manual;
  - Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy;
- Instruct the Secretary to record in the minutes of the relevant meeting:
  - That the foregoing information was provided and that the copyright slides were shown (or provided beforehand).

# **IEEE SA COPYRIGHT POLICY**

**By participating in this activity, you agree to comply with the IEEE Code of Ethics, all applicable laws, and all IEEE policies and procedures including, but not limited to, the IEEE SA Copyright Policy.**

- Previously Published material (copyright assertion indicated) shall not be presented/submitted to the Working Group nor incorporated into a Working Group draft unless permission is granted.
- Prior to presentation or submission, you shall notify the Working Group Chair of previously Published material and should assist the Chair in obtaining copyright permission acceptable to IEEE SA.
- For material that is not previously Published, IEEE is automatically granted a license to use any material that is presented or submitted.

# **IEEE SA COPYRIGHT POLICY**

- The IEEE SA Copyright Policy is described in the IEEE SA Standards Board Bylaws and IEEE SA Standards Board Operations Manual
  - IEEE SA Copyright Policy, see
    - Clause 7 of the IEEE SA Standards Board Bylaws  
<https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7>
    - Clause 6.1 of the IEEE SA Standards Board Operations Manual  
<https://standards.ieee.org/about/policies/opman/sect6.html>
- IEEE SA Copyright Permission
  - <https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/permissionltrs.zip>
- IEEE SA Copyright FAQs
  - <http://standards.ieee.org/faqs/copyrights.html/>
- IEEE SA Best Practices for IEEE Standards Development
  - [http://standards.ieee.org/develop/policies/best\\_practices\\_for\\_ieee\\_standards\\_development\\_051215.pdf](http://standards.ieee.org/develop/policies/best_practices_for_ieee_standards_development_051215.pdf)
- Distribution of Draft Standards (see 6.1.3 of the SASB Operations Manual)
  - <https://standards.ieee.org/about/policies/opman/sect6.html>

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## Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct

- All participants in IEEE-SA activities are expected to adhere to the core principles underlying the:
  - [IEEE Code of Ethics](#)
  - [IEEE Code of Conduct](#)
- The core principles of the IEEE Codes of Ethics & Conduct are to:
  - *Uphold the highest standards of integrity, responsible behavior, and ethical and professional conduct*
  - *Treat people fairly and with respect, to not engage in harassment, discrimination, or retaliation, and to protect people's privacy.*
  - *Avoid injuring others, their property, reputation, or employment by false or malicious action*
- The most recent versions of these Codes are available at <http://www.ieee.org/about/corporate/governance>

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## Participants in the IEEE-SA “*individual process*” shall act independently of others, including employers

- The [IEEE-SA Standards Board Bylaws](#) require that “*participants in the IEEE standards development individual process shall act based on their qualifications and experience*”
- This means participants:
  - **Shall act & vote** based on their personal & independent opinions derived from their expertise, knowledge, and qualifications
  - **Shall not act or vote** based on any obligation to or any direction from any other person or organization, including an employer or client, regardless of any external commitments, agreements, contracts, or orders
  - **Shall not direct** the actions or votes of other participants or retaliate against other participants for fulfilling their responsibility to act & vote based on their personal & independently developed opinions
- By participating in standards activities using the “*individual process*”, you are deemed to accept these requirements; if you are unable to satisfy these requirements then you shall immediately cease any participation

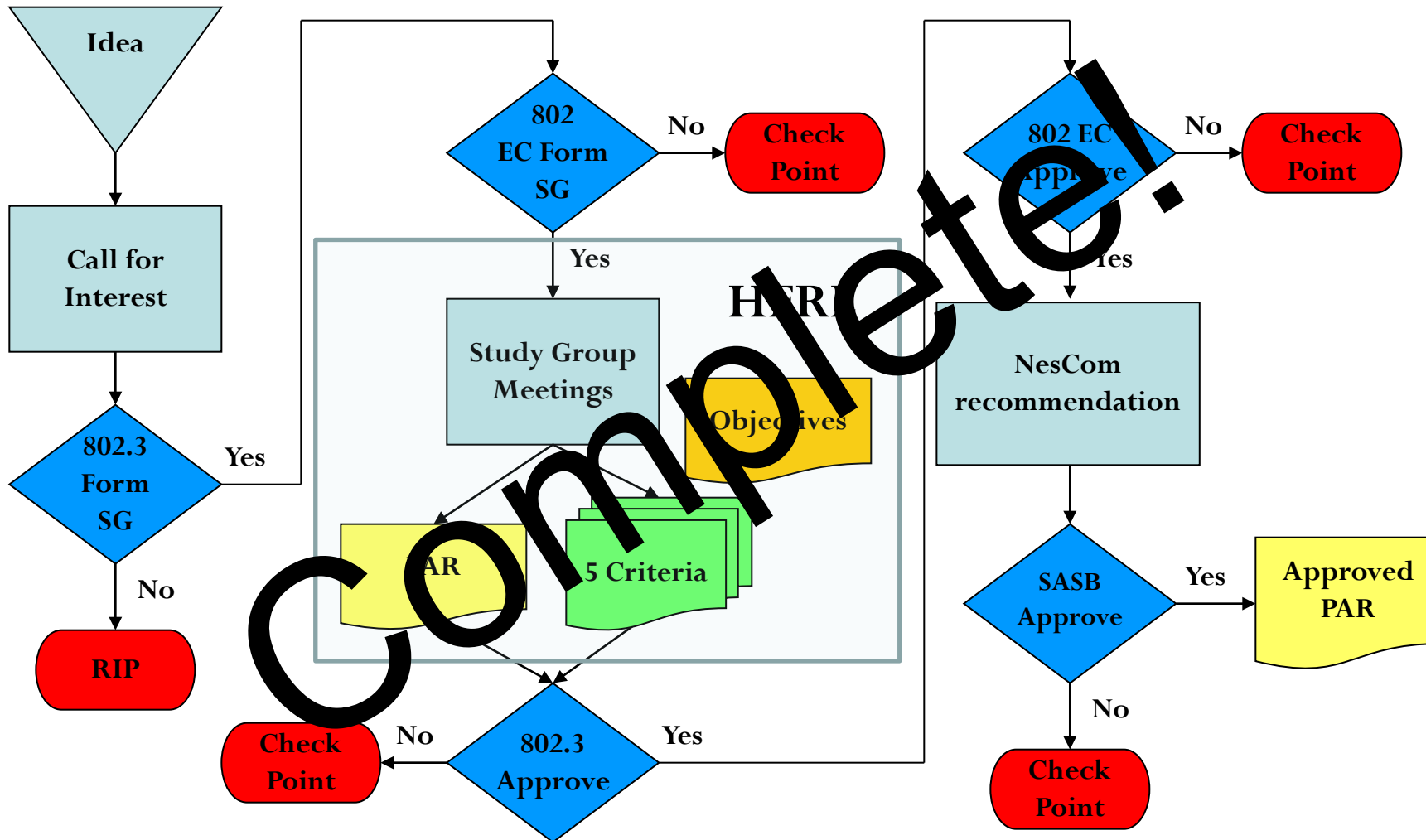


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## IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints

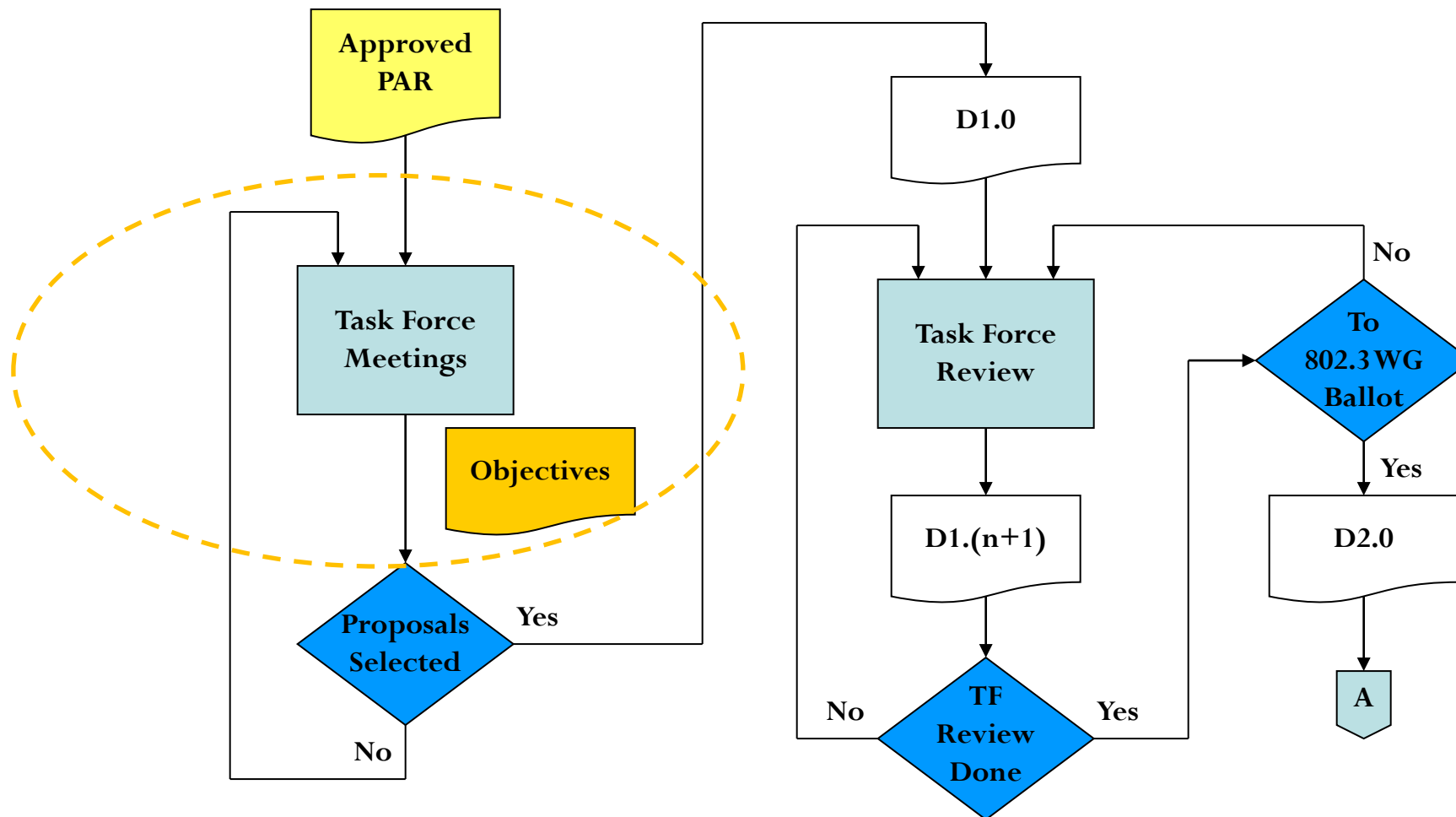
- The [IEEE-SA Standards Board Bylaws](#) (clause 5.2.1.3) specifies that *“the standards development process shall not be dominated by any single interest category, individual, or organization”*
  - This means no participant may exercise *“authority, leadership, or influence by reason of superior leverage, strength, or representation to the exclusion of fair and equitable consideration of other viewpoints”* or *“to hinder the progress of the standards development activity”*
- This rule applies equally to those participating in a standards development project and to that project’s leadership group
- Any person who reasonably suspects that dominance is occurring in a standards development project is encouraged to bring the issue to the attention of the Standards Committee or the project’s IEEE-SA Program Manager

# Overview of IEEE 802.3 Standards Process (1/5)- Study Group Phase

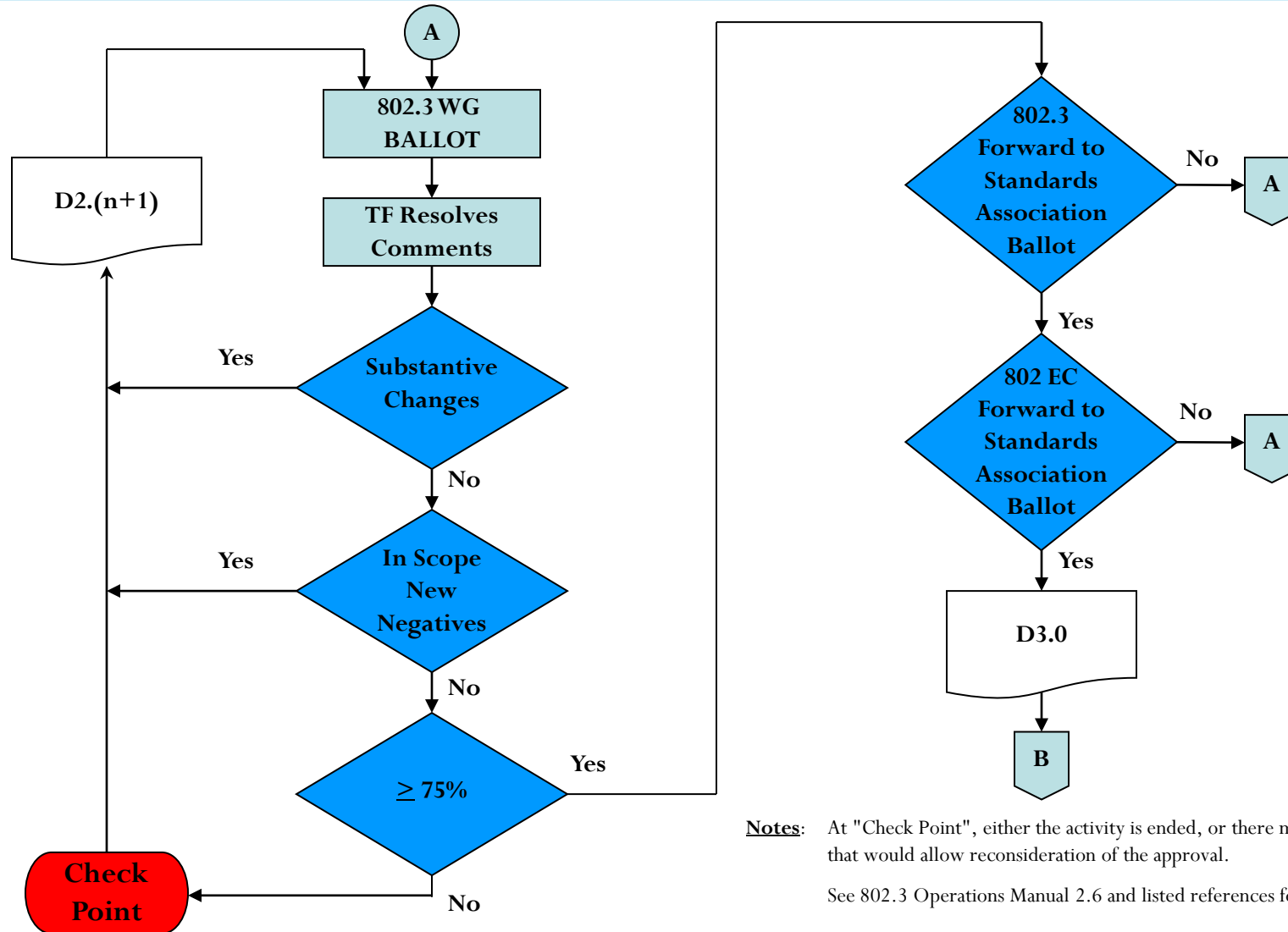


Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

# Overview of IEEE 802.3 Standards Process (2/5) – Task Force Comment Phase



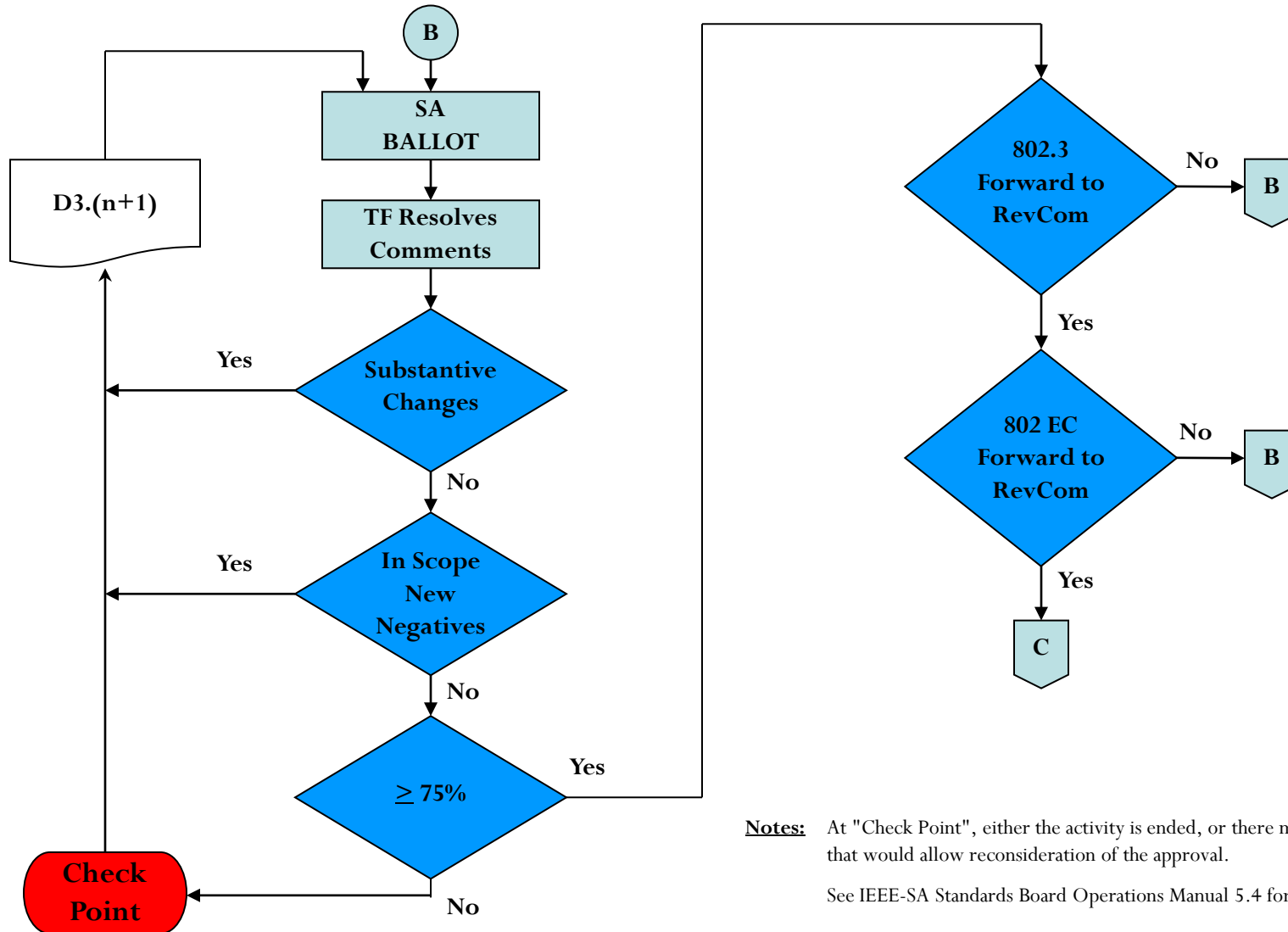
# Overview of IEEE 802.3 Standards Process (3/5) – Working Group Ballot Phase



**Notes:** At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

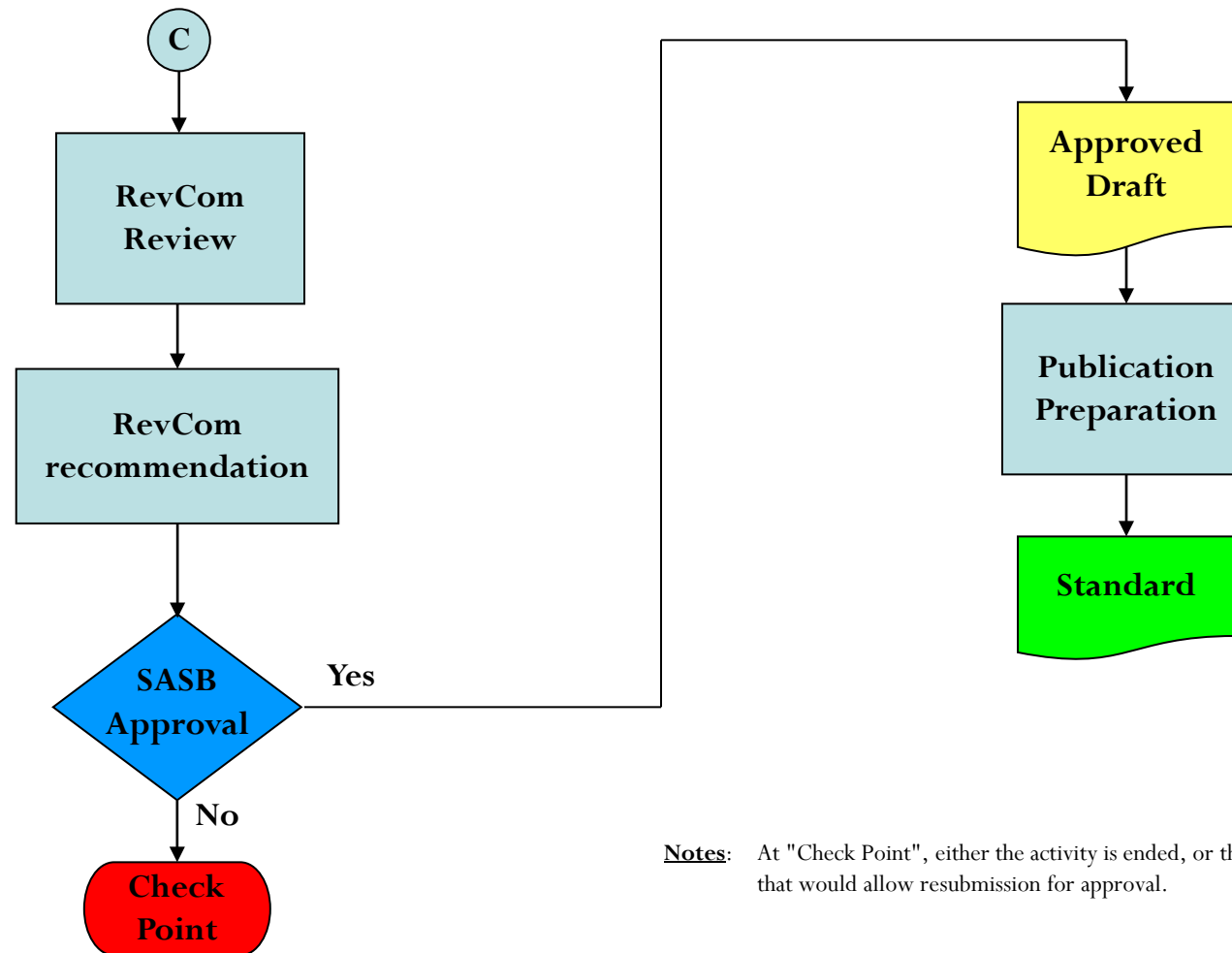
See 802.3 Operations Manual 2.6 and listed references for complete description

# Overview of IEEE 802.3 Standards Process (4/5)- IEEE Standards Association (SA) Ballot Phase



**Notes:** At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.  
See IEEE-SA Standards Board Operations Manual 5.4 for complete description

# Overview of IEEE 802.3 Standards Process (5/5) – Final Approvals / Standard Release



**Notes:** At "Check Point", either the activity is ended, or there may be various options that would allow resubmission for approval.

# Liaisons and Communications

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- None

# IEEE P802.3dg Approved Project Documents

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- PAR

- [https://www.ieee802.org/3/dg/P802d3dg\\_PAR.pdf](https://www.ieee802.org/3/dg/P802d3dg_PAR.pdf)

- 5 Criteria

- <https://mentor.ieee.org/802-ec/dcn/22/ec-22-0086-00-ACSD-p802-3dg.pdf>

- Objectives

- [https://www.ieee802.org/3/GT10MSPE/Objectives\\_11102021\\_SGadopted.pdf](https://www.ieee802.org/3/GT10MSPE/Objectives_11102021_SGadopted.pdf)



# Revised Timeline (approved 7/11/2023)

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✓ Sept 2022 – Measurements of Noise, Link segments examples

✓ Need to consider hybrid cables, separation of circuits, internal coupling

✓ Nov 2022 – Potential PHY & Link segment baseline starts

✓ Jan 2023 – PHY baseline discussion

Link segment baselines (electrical characteristics of communication) selected

❖ Jan 2024 – Draft 1.0 (baseline selected)

❖ Jan-May 2024 - TF review

❖ May 2024 – Draft 2.0, Initial WG ballot

❖ November 2024 – approval for SA ballot, initiate SA ballot

❖ March 2025 – conditional approval for RevCom

❖ June 2025 – SASB – standard complete

# Proposed direction (from March 2024)

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- Proponents commit to the group to bring full proposals – including justification for noise models & link segments used to the group PRIOR TO the May 2024 interim, for decision at the May interim.
- Models/Proposals should include:
  - Link segment models & rationale
  - Noise models for crosstalk AND impulse noise & rationale
  - Line code (constellation), baud rate, FEC, and framing overhead
  - Performance metrics and simulation resultsd
- Participants with questions they feel they need answered, please feel free to use the reflector

# Presentations (in order given)

Presentation	Presenter	Affiliation
Agenda	G. Zimmerman	Chair/CME Consulting (various)
IEEE 802.3dg 100BASE-T1L: Downshift - part 2	Peter Jones	Cisco
Partial Response with Bounded Running Disparity	Philip Curran, Brian Murray	Analog Devices
IEEE P802.3dg 100BASE-T1L PHY PAM-3 8B6T Partial Response with Bounded Running Disparity Time Domain Simulations	Brian Murray, Philip Curran	Analog Devices
Proposal for PCS Transmit Using 8b6T line code	Philip Curran, Brian Murray	Analog Devices
Further Consideration on 100BASE-T1L PHY	Tingting Zhang	Huawei Technologies
Brief PHY discussion		
Communications interference from Motor PWM variants within hybrid cables	Michal Brychta	Analog Devices
	David D. Brandt	Rockwell Automation
	Arun K. Guru	Rockwell Automation
	Scott T. Griffiths	Rockwell Automation
Motor PWM coupling on 100m hybrid cables (in context of 100BASE-T1L)	Michal Brychta	Analog Devices
	Reiner Biedenbach	Analog Devices
	Jürgen Funkhänel	Sick AG
Mixed Crosstalk Measurements in Near-Far Test Case	Francois Beauregard	Belden
PHY Parameter Decisions Towards Closure (LATE)	William Lo	Axonne
Motions		
Discussion of timeline, next steps	All	

# Motion 1

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- I move that the TF select PAM 3 as the modulation for the IEEE 802.3dg PHY
- M: Brian Murray
- S: Bob Voss
- Y: 18 N: 0 A:2
- Motion Passes

# Motion 2

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- Move that 802.3dg add the capability to support sequence ordered sets to the MII signaling
- M: Tim Baggett
- S: Brian Murray
- Motion passes without objection

# Motion 3

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- Move that 802.3dg support at least one PHY variant with FEC
- M: Yan Zhuang
- S: Tingting Zhang
- Y: 8
- N: 7
- A: 10
- Motion Fails

# Next meetings

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- Ad hocs – Wednesday 7-9 pacific, opportunities 5/29, 6/11 or 6/12, 6/26
- July 2024 802 Plenary, Montreal, Quebec, Canada (July 15-19)
  - In-person with remote access
    - See <https://www.ieee802.org/3/interims/index.html> for information
  - Registration required, see <https://web.cvent.com/event/64f6931c-b20d-44af-a54e-4830fa2f7097/summary>
    - Early Registration Fee ends May 17, 2024!
  - Note - Saturday July 13 before the meeting is a joint ITU-T SG15 / IEEE 802 Workshop

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# Thank You!



# Have you thought about nominating your peers in this room for a 2024 IEEE SA award?

**Nomination Period: Closes 31 July**  
**Awards Ceremony: Sunday, 8 December**

Nominate today at [standards.ieee.org/about/awards/nominate/](https://standards.ieee.org/about/awards/nominate/)



Meeting Resumes at 10:25 AM EDT